POLICY RESEARCH WORKING PAPER 1271

Measuring the Effect of External Shocks and the Policy Response to Them

Empirical Methodology Applied to the Philippines

F. Desmond McCarthy
J. Peter Neary
Giovanni Zanalda

How can the governments in Eastern European and developing countries reduce their vulnerability to such shocks? What are appropriate policy responses? Here is a method for measuring the effect of external shocks on the current account, applied to the Philippines.

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Summary findings

Economies benefit from international trade, but joining the world market also exposes them to external shocks. How can the governments in Eastern European and developing countries reduce their vulnerability to such shocks? What are appropriate policy responses?

McCarthy, Neary, and Zanalda examine how external shocks (such as commodity price changes, variations in global demand, and fluctuating interest) affect economic performance, and how those effects are mitigated by the right policy responses at the right time.

They introduce a methodology for measuring the effect on current account of external shocks and apply it for the Philippines. They rationalize balance of payments responses to external shocks and domestic policies in a theoretical model of a small open economy.

Did the Philippines choose the appropriate policies when faced with balance of payments disequilibrium?

Among comparable Asian countries, the Philippines in 1970 enjoyed a relatively high per capita income that has since failed to keep pace. Why?

Adverse shocks did not help, but other countries in the region experienced similar shocks and performed better. The Philippines relied heavily on external flows, which fueled an investment boom. Given low real interest rates at the time, this seemed a reasonable approach — but there were two flaws to it.

First, the investments were poorly conceived, were mismanaged, failed to produce appropriate returns, and became a burden on the state. One large nuclear power plant has yet to yield a return.

Second, with so many external resources available, the government ignored the need for meaningful structural reform, especially in trade and public sector finance. Inefficient allocation of public resources and distortionary trade policies can absorb more than all the gains from favorable shocks.

When external conditions improved in the mid-1980s, the Philippines could not take advantage of them because of its heavy external debt and its cumbersome trade regime. Had authorities introduced structural reform (liberalizing trade, strengthening public finance, and freezing up factor markets), the economy could have more easily absorbed the impact of unfavorable shocks.

In 1991, the IMF gave the Philippines a stand-by credit. Authorities are now addressing some structural problems by liberalizing the exchange rate, removing import tariffs, and restructuring the public sector, including the Central Bank. Perhaps this will allow more sustainable growth and an economy that can more readily absorb external shocks.

This paper — a product of the Office of the Vice President, Development Economics — is part of a larger effort in the Bank to analyze external shocks, policy response, and economic performance. The study was funded by the Bank's Research Support Budget under the research project "Economic Shocks and the Global Environment" (RPO 677-75). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mila Divino, room S9-049, extension 33739 (47 pages). March 1994.

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1. INTRODUCTION

The economic literature is replete with theories that seek to account for various growth and development experiences across countries. In much of this literature there is discussion of the role of external shocks and in particular how much of a country's economic performance may be attributed to them and to what extent such effects dominate policy efforts. Corden, in Little et al. (1993) studied a sample of 18 countries during the period 1973-88 and sought to understand the role played by a wide variety of factors in accounting for economic performance during this period. Among the factors considered were external shocks. Their analysis suggested that the magnitude of the shocks, per se, was not as critical as the timeliness and form of policy response to them.

Rodrik (1993) reviewed trade and industrial policy reform during the decade of the eighties and concludes: "public enterprise, industrial promotion, and trade protection were out; privatization, industrial deregulation, and free trade were in." He also indicated that "we lack a good understanding of how and why certain configurations of economic policy render the economy more resilient to external shocks than others."

It is well established that countries gain from trade. However, integration in the world market also exposes countries to external shocks. Governments in developing and Eastern European countries are becoming increasingly aware of the need to face this problem. One of the main issues will be the reduction of vulnerability to such shocks and what the appropriate policy response should be.

This paper seeks to provide a modest contribution to this debate by examining the role of external shocks. It first provides a broad outline of the theoretical model which is fully articulated in Neary (1993). A methodology for computing external shocks is then introduced and this is then applied to the case of the Philippines. Various performance measures of the responses are given together with measures of the associated policy variables adopted. It seeks to extend earlier work by Balassa (1981) and more recently by McCarthy and Dhareshwar (1992).

2. THEORETICAL BACKGROUND

General Considerations

The issue of what constitutes an economic shock is debatable. In general terms it can be defined as some event or change in behavior that is generally accepted as being outside the "normal" course of events. From the perspective of the economic policy maker they are exogenous. For instance there is general agreement that the sharp increases in oil prices which occurred in 1973 and again in 1979/80 were indeed shocks. However there were many other sharp movements that can be viewed as shocks, such as commodity price changes in the early eighties together with significant variations in global demand during the eighties, large interest rate and exchange rate fluctuations in that decade. Most natural disasters and wars can also be classified as shocks.

A Theoretical Framework

The balance of payments response to external shocks and domestic policies may be rationalized in terms of a theoretical model of a small open economy. The model draws on existing literature on the theory of distortions and welfare, and in particular on its applications to the "Dutch Disease." However, it attempts to make this literature more relevant to a policy-making context in which the economy responds asymmetrically to favorable and unfavorable shocks; in which current shocks cannot be identified as either permanent or temporary; and in which volatility of the external environment is as much a problem as the magnitude of individual shocks.

The broad outlines of the model are as follows (details are given in a companion paper (Neary, 1993)). The model is a two-period one, with the convention throughout that lower-case and upper-case variables refer to the first and second period respectively, while bold variables refer to both periods together. Thus, in the case of consumer prices, p and P are the vectors of current and future prices, respectively, and $\mathbf{p}$ is the vector of prices in both periods, $\mathbf{p}^t = (p^t, P^t)$. The future price vector P is expressed in present value terms, with future spot prices denoted by p_2. Hence, P equals δp_2, where δ is the discount factor, equal to the inverse of one plus the world interest rate: $\delta = (1+r^*)^{-1}$. Assuming that domestic agents can borrow or lend at the world interest rate, the outcome of utility maximization by the aggregate consumer can be characterized in terms of a two-period expenditure function, $e(\mathbf{p},u)$, where u is the consumer's lifetime utility. The value of GNP in

each period is given by a GNP function, which has as its arguments domestic consumer prices, p, the world price and the constrained sales level of an export good not consumed at home, q^* and x, and the level of employment, ℓ. Over the two periods, investment I is chosen optimally to maximize the present value of production, denoted by a two-period GNP function, g:[1]

$$(1) \qquad g(p,q^*,x,\ell) = \text{Max}_I\,[g(p,q^*,x,\ell) - p_I I + G(P,Q^*,X,L,I)].$$

The current balance of payments deficit is therefore given by the following:

$$(2) \qquad b = e(p,u) + p_I I(P,X,L) - g(p,q^*,x,\ell) + \gamma - f$$

Here, γ is a parameter representing current government expenditure (net of tax revenue) on traded goods, and f is an exogenous transfer from abroad. The equation thus shows that the balance-of-payments deficit equals absorption (consumption plus investment) minus GNP (or investment minus savings) plus the government deficit less net international transfers. Finally, the specification of the model is completed by the assumption that the level of employment in each period is determined endogenously in the face of exogenously given wages, w and W.

Under these assumptions the effects of external shocks and policy changes on the current balance-of-payments deficit may be obtained by differentiating equation (2):

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[1] For simplicity, we assume that investment goods are imported freely at a given price p_I.

$$(3) \qquad db = \overset{t}{\alpha_1} dp^* + \alpha_2 dq^* + \alpha_3 dx + \alpha_4 df + \overset{t}{\beta_1} dP^* + \beta_2 dQ^* + \beta_3 dX + \beta_4 dF + \chi_1 d\gamma + \chi_2 dw + \chi_3 dW,$$

with the values of the coefficients given in Table 1. Note that the α_i coefficients give the effects of temporary external shocks while the β_i coefficients give the effects of anticipated future shocks. The sum $\alpha_i+\beta_i$ therefore gives the effects of permanent shocks.

Note that equation (3) provides a measure of all effects on the balance of payments. These include current exogenous factors (the first four terms), future factors (the second set of four terms). The last line contains a parameter γ, representing changes in domestic current government expenditures while the last two terms are domestic wage level change present and future. Since Ricardian equivalence is assumed there is an offsetting (negative) future expenditure Γ, such that the net present value of the government deficit, $\gamma+\delta\Gamma=0$, is zero.

Inspection of Table 1 shows clearly that the magnitude and even the sign of the effects of exogenous shocks on the balance-of-payments deficit depends crucially on the nature of expectations about the future. Since such information is almost certain to be unavailable, this suggests that specifying and estimating a formal econometric version of equation (3) is infeasible. This therefore provides a justification of the approach adopted in the

text, which is to attempt to decompose the change in the balance of payments deficit using equation (3) as a framework.

In the empirical work we decompose the analysis into external shocks and what are termed performance measures. The external shocks are the estimated impact on balance of payments due to changes in prices of exports, prices of imports, global quantity demand, interest rate changes and in some instances changes in foreign transfers. The role of policy instruments in addressing the changes in the balance of payments is not computed directly but rather the estimated consequences of these policy actions. These are: changes in quantity of exports due to domestic export promotion efforts, changes in imports due to changes in growth rate of the economy and due to intensity of import use per unit of GDP and finally additional net external financing. Further work, which is not done at this stage, could help elaborate the relation between wage, fiscal and monetary policy and changes in performance measures.

Empirical Calculation

In this work we compute the effect of exogenous factors that have exerted major impact on a significant number of countries at various times during the last two decades: terms of trade, global demand and interest rate. These correspond to the first four terms in equation (3). We also include a fourth shock due to the cumulative impact of net external borrowing resulting from response to these external shocks. Rather than deciding explicitly,

whether the magnitude of the resulting changes or other features warranted the label of temporary or permanent shocks, it was decided to finesse this issue to some degree by recomputing the resulting deviations from what is considered normal trend (in most instances) on a year-by-year basis. These three potentially shock creating factors also have the property that they have affected all countries to varying degrees. Some of the elements are now discussed in detail.

Terms of Trade. The impact on the balance-of-payments due to changes in terms of trade are based on variations in the price and quantity of exports and imports each year. A key difficulty in deciding on changes in terms of trade is on selecting which prices and trade weights to use. In this analysis, we take the volume of exports in year t times the change in unit price from the preceding year to get the change in exports value due to price change. A similar calculation gives the import value change. Thus the weights (quantity-based) are updated each year and the price deviations are always relative to the immediately preceding year. These can be further disaggregated by subcategory as deemed appropriate as illustrated in Appendix II. This allows one to avoid some of the misleading results that ensue from using a fixed set of weights over time in terms of trade measure, especially when trade is unbalanced as it is for most developing countries. It also means that it will be possible to compare the behavior of different countries in response to similar price shocks (e.g. oil price shock).

Global Demand. While the terms of trade provide a measure of price variations it is also important to assess quantity effects. The growth of world demand and the

even faster growth in world exports over recent decades has been an important source of growth for many countries. On the other hand slowdown in this demand, as occurred in the mid-seventies and early eighties, had a negative impact on most countries. By computing the share for country exports of the global total, one can gauge the impact of demand variations. Details on the methodology are given in Appendix I. This can be readily extended to reflect specific export categories or the particular direction of trade.

Interest Rate. One measure of the cost of capital is the real interest rate. However, calculation of the real interest rate requires a measure of the expected rate of inflation. When nominal rates rise sharply, the expected change in the rate of inflation tends to follow so that usually the result is below normal real rates. However, when inflation rates decline, real rates usually do not fall as quickly and so tend to be high. Friedman's (1982) analysis of data over a hundred year period confirmed this pattern. Generally real rates tended to be low in the seventies, but high in the eighties. In seeking to evaluate the role of interest rate variations, ideally one should analyze the impact on the real economy and on investment in particular. At this stage we are primarily concerned with the impact on the current account and so the focus is on nominal rates.

During the last 20 years nominal interest rates (six month dollar LIBOR) have varied between 5 and 15 percent. For countries with large external debt positions this causes a major source of variability in the current account. Most developing countries are net debtors so that this volatility has itself resulted in an increasing burden. This problem has become more

acute since the increasing use of variable interest rate instruments from the early 1980s. Ideally the maturity of debt has to be considered also in this context. In particular, for highly-indebted countries, who had borrowed from private commercial banks at variable rate and short maturity, an increase in world interest rates represents a significant external shock.

Cumulative Impact of Additional Borrowing Due to Shocks (CUM). The response to most shocks includes some change in net external financing. For unfavorable shocks this results in an additional burden which will have repercussions for ensuing periods. One can also envisage a situation where some external debt might be retired under a favorable shock. For many countries undue reliance on external financing has produced highly unfavorable consequences.

When a country has ready access to external financing, it is important that total external debt should not exceed prudent limits. Unfortunately there are no hard or fast rules about what these limits should be. If there are some extraordinary investment opportunities then one can envisage higher levels of debt being acceptable. In general one might be guided by some of the rules used by creditors. Some creditors suggest that debt service to export ratio should not exceed 20% for an "average" type country. However in a world of variable interest rates countries should be careful about resorting to external borrowing that could plunge them eventually into a debt spiral.

3. APPLICATION TO THE PHILIPPINES

The specific case of the Philippines is now discussed. Details of the calculations actually used are given in Appendix I.

External Shocks

The broad pattern of the external shocks estimated for the Philippines is given in Figure 1 with the convention that positive values indicate an unfavorable shock. The corresponding values are given in Table 2 as a percent share of GDP.

The Philippines suffered unfavorable shocks each year over the period 1972 to 1991 with only modest relief in 1973, 1983, and 1988. The shocks of largest magnitude occurred in 1975 at 9 percent of GDP and again in 1981 at 6 percent of GDP. The average value of these shocks over the period was 2 percent of GDP (2.6 percent in the seventies and 1.8 percent in the eighties) while the standard deviation was 2.7 percent of GDP (3.3 percent in the 70s and 2.3 percent in the eighties). While the *average magnitude of the shocks was unfavorable* throughout the period the *volatility* was a further complicating factor for policy makers faced with the problem of choosing the appropriate response.

Decomposition of the Shocks

The three principal sources of external shocks and the resulting additional debt service component are shown in Figure 1 corresponding to the data given in Table 2.

Terms of Trade. It is noteworthy that export and import prices seem to have followed differing paths during much of this period. Prices for Philippine export commodities rose sharply in 1973 and the following year. However, this gain was more than offset by the rise in import prices, primarily petroleum prices. When import prices again rose sharply between 1978 and 1981 their impact on the balance of payments was not moderated by a corresponding rise in export prices. In 1982, the world recession led to lower prices for Philippine exports, but this was offset to some extent by an easing of import prices. Later in 1989 and 1990 the Philippines again suffered terms of trade losses as export prices eased while import prices rose. A total terms of trade measure can mask a number of effects that may have different policy implications. First is the possibility of having simultaneous favorable and unfavorable price changes for exports and imports. There is also the possibility that, for many countries, price changes for certain trade categories may be more important than others. In most developing countries there is usually a merchandise trade deficit so that the impact of import price changes tend to have a proportionately stronger impact on the trade balance than similar changes in export prices. For oil exporters it is often the reverse. One can in principal desegregate these effects further by applying a similar methodology to individual trade categories. This computation is useful when trying to estimate the impact and response to a

shock on say a particular export such as coconut oil in the case of the Philippines or import category like petroleum (see Appendix II, figure 5, table 5).

Export Volume Effect. The Philippines suffered a significant loss in its share of the global market in 1975 and again from 1980 to 1983. On the other hand, during the buoyant global demand of the mid/late eighties they achieved only modest gains. This is discussed in the section on policy instruments.

Interest Rate Impact. The impact of interest rate changes is estimated for the variable interest rate component of external debt on a year by year basis. Thus, the cumulative impact of the interest rate change on any additional new debt during the year is not explicitly taken into account in this analysis. Variable interest rate debt in the Philippines reached significant levels in the early eighties and by the end of the decade was about US$10 billion or about 35 percent of total external debt outstanding and disbursed. Thus each point change in interest rates resulted in a change of about US$100 million per annum in the charges on the variable interest rate debt for that country. On the other hand, the fall in global interest rates in 1990 and again in 1991 benefitted the Philippines by about US$100 million and US$240 million respectively.

Additional Debt Service (CUM). The Philippines resorted heavily to external finance to response to both the first and second oil shocks. The service burden this generated grew rapidly in the early eighties when world interest rates rose. This additional

burden alone was about 2 percent of GDP per year during the first half of the eighties. The strong contraction of the economy in 1984 and 1985 allowed some moderation in the growth of external debt. Nevertheless the additional debt burden incurred in response to the shocks of the seventies exerted a major negative impact on the economy throughout the eighties.

Having provided these broad measures of external shocks we next examine how the Philippines responded to them. This is done by estimating a number of performance measures.

Performance Measures

When faced with an external shock leading to a disequilibrium in the balance of payments, policy makers may react in a number of ways. The actual policy instruments will typically include fiscal, monetary and exchange rate policy. In this analysis we do not consider the instruments explicitly but rather performance measures. Four of these are computed on a year-by-year basis: export promotion, import intensity, economic compression and additional external financing. The details of how these are actually calculated are given in Appendix I. In the literature on external shocks a distinction is often made between temporary and permanent. The conventional wisdom is that it is acceptable to borrow one's way through temporary unfavorable shocks but that permanent unfavorable shocks may require more "dramatic" policy adjustments. The problem is that for most shocks it is difficult, a priori, to make this distinction so that the best economic judgement may not be reflected in the choice of

policy instruments. A prudent policy maker should consider adjusting to some degree to all shocks. On the other hand, favorable shocks may provide an opportunity for introducing needed structural reforms.

Before discussing the policy instruments we first discuss the four performance measures and again use the Philippines as a quantitative example. As indicated in Appendix I the total performance response in each year equals the total external shock impact on the current account ex post. The equilibrating item is the additional net external borrowing--ANEF. The estimates of the performance measures for the Philippines are given in Figure 2 and Table 2.

Export Promotion. The "normal" share of exports in total world exports is obtained for each year by comparing the export growth volume for the country and the world. To the extent that the Philippines export volume share exceeds this level we term this export promotion. One can of course modify this measure to suit particular country situations. For instance one might desegregate by export category and also by export market. However, it may be more expedient to first look at this relatively broad aggregate measure before deciding how much more detail is warranted. In Table 2 one notes there was some positive export promotion in 1975 and 1977 and again during the early eighties. However, this effort began to taper off and actually became negative in the mid-eighties. Later in the decade export promotion efforts began to show some modest improvement.

Import Intensity. The import intensity effect in this work is a measure of change in imports due to the change in import elasticity. That is, if one were to assume no change in the growth rate. It does not make any assumption about how the change in import elasticity was brought about. This import intensity measure shows a certain degree of volatility, in particular during the eighties. It varied between 2.7 percent of GDP in 1984 and -2.8 percent of GDP in 1988. Such major changes in the level of import absorption per unit of GDP suggest a certain lack of continuity in policy as producers change the import content in what seems to be an erratic manner.

Economic Compression. The effect on imports due to a slowdown in the economic growth rate alone is called the economic compression effect. Note that this is computed on the assumption that the elasticity of imports with respect to GDP does not change. What is striking is the sustained compression of the economy over the period 1980 through 1986 and again in 1991.

Additional Net External Financing (ANEF). After the first oil shock the Philippine authorities sought to redress, by varying degrees, unfavorable developments in the current account by virtually continuous recourse to additional external financing up to 1982--one exception being 1977. Then after the global tightening of capital availability to much of the developing world they were obliged to curtail their external borrowing up to the later eighties.

Having quickly assessed the external shocks and the concomitant performance measures it is of interest to examine the policy measures adopted.

4. POLICY INSTRUMENTS

A selection of economic variables are given in Table 3 while a listing of main events and policy measures are given in chronological order in Table 4. The balance of payments disequilibrium following the first oil shock was addressed primarily by increased external borrowing. This enabled the public investment share to increase from about 2 percent to 8 percent of GDP in the late seventies helping to boost the total investment share from 17 percent to 27 percent of GDP--see Figure 3. This large rise of investment provided the main stimulus to the economy although there was also some modest export growth. A cursory review would suggest that since the increased borrowing went mostly to investment, rather than consumption, that this was an appropriate response. However, there are some problems with this approach. One is that the investments should yield adequate return; and second, if the environment changes, that the erstwhile good investments should not deteriorate. This in turn would suggest that in a volatile environment the overall gestation period for investment becomes a key concern.

When the second oil price increase occurred in the late seventies the authorities sought to continue foreign borrowing at first and so maintain the strong investment performance underpinning GDP growth.

However, much of the investments undertaken did not produce the returns expected, either because they were poor investment choices to begin with, or as conditions changed they were less and less appropriate, so that by the early eighties the fiscal situation began to deteriorate. The situation was further compounded by an increasing lack of confidence in the regime as indicated by an increase in the premium on the black market above the official exchange rate (Figure 4a) and by a steady increase in capital flight (Figure 4b). Increasing difficulties in a number of industrial firms and serious problems in the banking sector led to a foreign exchange crisis (Table 4). In 1983 the situation became untenable and in 1984 and 1985 the output fell dramatically.

At the same time inflation rates increased rapidly further eroding stability and the climate for investment. Gross investment, as a share of GDP, fell from 29.8 percent in 1983 until it reached 16.8 percent in 1986.

Because of the scarcity of foreign exchange, the government was then obliged to contain economic activity. Thus the imbalance was addressed by a fiscal and debt squeeze while also curtailing imports and inducing reduced import intensity. Poor export incentives meant that the Philippines during the mid-eighties was unable to avail of the buoyant global

markets at that time. The authorities did not take advantage of favorable shocks at that time to correct some of the structural problems in the economy. The lack of a serious industrial policy penalized furthermore the country in the eighties, when foreign capital flew towards other more appealing countries in the region.

After 1986 the real exchange rate began to depreciate and this helped to boost a modest recovery in exports. However this was also accompanied by a surge in imports so that the current account deficit again began to grow.

In terms of the theoretical framework presented, the discussion is between expenditure-switching and expenditure-reducing policies. The reaction to favorable and unfavorable external shocks will depend on the structure of the economy and on the sequence of policies adopted by the government. In equation (3) labor market is taken into consideration. In general the existence of a flexible labor market, in terms of wage and labor force mobility across sectors, is an important condition to restructuring the economy. However, lack of skilled labor and of competitive markets represent a constraint to such attempts. In the case of the Philippines, the monopolistic structure of key markets have most likely slowed down the implementation of economic reforms.

5. POSTSCRIPT

With the benefit of hindsight one may ask whether the Philippines did in fact choose the appropriate policies when faced with balance of payments disequilibrium?

Among comparable Asian countries in 1970 the Philippines enjoyed a relatively high per capita income but it has since failed to keep pace. It seems logical to ask why.

The adverse external shocks obviously did not help the situation. However many other countries in the region also experienced similar shocks and yet performed better. Inevitably, there are a wide range of factors that go into explaining economic performance. External shocks and the policy response to them provide one vehicle for organizing at least part of the explanation.

Perhaps the most notable feature of the policy response in the seventies was heavy reliance on external flows and their use to facilitate an investment boom. Given the relatively low real interest rates at the time one can argue that this seemed like a reasonable thing to do. There were however two major flaws with this approach.

The first relates to the actual investments undertaken. These seem to have been poorly conceived. They failed to produce appropriate returns, were associated with a lot of mismanagement and finally became a major burden on the state. Among the more obvious mistakes is a large nuclear power plant that has yet to yield any return.

The second is that the seemingly liberal availability of external resources helped preclude the need for meaningful structural reform, especially in areas such as the public sector finance and the trade regime. The lesson of theoretical models is that inefficient public-sector resource allocation and distortionary trade policies are costly at any time and can absorb more than all of the gains from favorable shocks.

When external conditions improved in the mid-eighties the Philippines was poorly positioned to take advantage of them. This was largely due to the legacy of the seventies: a large external debt and a cumbersome trade regime. However, the authorities might have made a better effort to use the gains from favorable shocks to introduce various structural reforms such as reducing impediments to trade, strengthening public finance, and freezing up factor markets. This would have introduced more flexibility into the economy which would have helped reduce the impact of unfavorable external shocks.

In 1991 the Philippines was given a stand-by credit by the IMF. The present authorities are now finally addressing some of the structural problems; liberalizing the exchange rate regime, removing import tariffs and restructuring the public sector including the Central Bank. One hopes that this will provide a more sustainable basis for future economic growth in the Philippines and result in an economy that can absorb external shocks more readily.

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APPENDIX I

EXTERNAL SHOCKS AND PERFORMANCE MEASURES: GENERAL METHODOLOGY

External Shocks

In this appendix three types of direct shocks and one indirect are considered.

Direct Shocks:

1) Terms of Trade Effect

2) Export Volume Effect

3) Interest Rate Effect

Indirect Shock:

4) Cumulative Impact of Additional Financing

1) Terms of Trade Effect (TOTT)

In this part, the methodology used to estimate the impact of terms of trade variations is presented. Firstly, import and export price effects are estimated separately and later combined to obtain the total terms of trade external shock. This approach can be extended to further disaggregation based on different trade categories. Details are given in Appendix II.

Terms of Trade

Import and export values, gained or lost by the country as a consequence to changes in the terms of trade, are obtained using the following approach.

$$TOTT_t = TOTM_t - TOTX_t \qquad t=(1971,\ldots,1991)$$

$TOTT_t$ is the net effect of terms of trade variation at time t due to import and export price changes from time t-1 to t. The convention adopted is that unfavorable terms of trade effect $TOTT_t$ is positive.

Import Effect

$TOTM_t = VM_t (PM_t - PM_{t-1})$

A positive value for $TOTM_t$, represents a loss in imports value by the Philippines at time t, due to an unfavorable import price change from time t-1 to t.

$VM_t = M_t/PM_t$ = volume of merchandise imports by the Philippines at time t

M_t = value of merchandise imports by the Philippines at time t (CIF, current US$)

PM_t = unit value of imports at time t (index, 1987=100)

Export Effect

$TOTX_t = VE_t (PE_t - PE_{t-1})$

A positive $TOTX_t$ means a gain in exports value by the Philippines at time t, due to a favorable export price variation from time t-1 to t.

$VE_t = E_t/PE_t$ = volume of merchandise exports by the Philippines at time t

E_t = value of merchandise exports by the Philippines at time t (FOB, current US$)

PE_t = unit value of exports at time t (index, 1987=100)

Adding together the import and export effects:

$$TOTT = [VM_t (PM_t - PM_{t-1})] - [VE_t (PE_t - PE_{t-1})]$$

Thus, a positive $TOTT_t$ is an unfavorable shock. Note that $TOTT_t$ gives the net result for one year. If one wishes to compute the terms of trade effect over a number of years then these terms may be summed.

2) Global Demand: Export Volume Effect (EVE)

The global demand shock is estimated by looking at the quantity effect. The Export Volume Effect indicates that the Philippines' share of world export is changed as a consequence of growth/slowdown in the world demand. A positive EVE_t is an unfavorable shock on the current account.

$$EVE_t = E_{t-1} (TXVW_t - GRXVW_t) \qquad t=(1970,..,1991)$$

EVE_t is the value of exports by the Philippines at time t if it is assumed that there is no change in price from time t-1 to t.

E_{t-1} = value of merchandise exports by the Philippines at time t-1 (FOB, current US$)

$TXVW_t$ is the expected rate of growth in world export volume at time t, based on the previous ten years. The estimate is obtained through:

$$\log XVW_i = a + bt_i \qquad b = TXVW_t \qquad i=t-11,\ldots,t-1$$

XVW_t = volume of world merchandise exports at time t

$GRXVW_t = (XVW_t - XVW_{t-1})/XVW_{t-1}$ growth rate in world export volume from time t-1 to t

3) Interest Rate Effect (IRF)

$$IRF_t = LTVIR_{t-1} (i_t - i_{t-1}) \qquad t=(1970,..,1991)$$

IRF_t is the loss/gain in interest payments at time t caused by movements in the international interest rate.

$LTVIR_{t-1}$ is the volume of long-term debt at time t-1 sensitive to changes in international interest rate. It is computed by adding together the share of public and publicly guaranteed long-term debt at variable interest rate and the total private non-guaranteed debt. The latter is assumed to be interest sensitive.(See World Bank, World Debt Tables 1992-1993)

i = Six-months LIBOR on US dollar deposits. (Period average in percent per annum).

A positive IRF_t, as determined by an increase in the international interest rate, means a worsening in the country's obligation or an unfavorable shock.

4) Cumulative Impact of Additional Borrowing due to Shocks (CUM)

Assume that additional net external financing at time t due to impact of all shocks at that time, net of other responses, is $ANEF_t$.

Then at time t+1 this gives rise to an additional burden of CUM_{t+1} where

$$CUM_{t+1} = ANEF_t\ (i_{t+1})$$

If one continues to assume that the interest is paid each period then at time t+j

$$CUM_{t+j} = ANEF_{t+j-1}\ (i_{t+j}) + ANEF_{t+j-2}\ (1+i_{t+j-1})i_{t+j} + \ldots$$

Thus the cumulative impact of additional net external financing can become quite large. On the other hand under favorable shocks ANEF may be negative thereby reducing or even making the overall burden favorable. This could then be interpreted as an increase in reserves.

Performance Response Measures

Four measures of performance response are considered:

1) Export Promotion (EPR)

2) Import Intensity (MSUB)

3) Economic Compression (ECOM)

4) Additional Net External Financing (ANEF)

1) Export Promotion (EPR)

$EPR_t = EA_t - EH_t$ $\quad t=(1970,..,1991)$

EPR_t provides a measure of export promotion by the Philippines at time t, assuming that prices had not changed from time t-1 to t. The difference between growth in the Philippines and world export volumes is used to gauge the export promotion effort undertaken by the country.

$EA_t = E_{t-1}(1 + GRVE_t)$

EA_t is the value of exports at time t, at the price prevailing at time t-1.

E_{t-1} = value of merchandise exports by the Philippines at time t-1 (FOB, current US$)

$GRVE_t = (VE_t - VE_{t-1})/VE_{t-1}$ growth rate in the Philippines export volume from time t-1 to t

$VE_t = E_t/PE_t =$ volume of merchandise exports by the Philippines at time t

$EH_t = E_{t-1}(1 + GRXVW_t)$

EH_t is the value of exports at time t determined by changes in the volume of world export, assuming that the price had not changed from time t-1 to t.

$GRXVW_t = (XVW_t - XVW_{t-1})/XVW_{t-1} =$ growth rate in world export volume from time t-1 to t

XVW_t = volume of world merchandise exports at time t

Substituting we obtain:

$EPR_t = E_{t-1}(GRVE_t - GRXVW_t)$

A positive EPR_t indicates that the country increases its share of world exports. This result might be interpreted as the consequence of an export promotion policy. However, EPR_t is strongly dependent on changes in international conditions which are independent from domestic policies.

2) Import Intensity (MSUB)

$MSUB_t = MH_t - MA_t$ $\quad t=(1970,..,1991)$

$MSUB_t$ is a measure of import intensity computed as follows:

$MH_t = M_{t-1}[1 + EL_t(GDPGR_t)]$

MH_t is a hypothetical value of imports at time t, assuming that the import elasticity to GDP had remained at its "historical" level and that there is no change in price from time t-1 to t.

EL_t is the import elasticity to GDP expected at time t based on the previous ten years and computed by regressing

$\log V_i = a + b \log GDP_i \quad b=EL_t \quad i=t-1,...,t-11.$

V_t = country's import volume index at time t

$GDPGR_t = (GDP_t - GDP_{t-1})/GDP_{t-1}$ growth rate of country's GDP from time t-1 to t

$MA_t = M_{t-1}(1 + GRVM_t)$

MA_t is the value of imports at time t, if it is assumed that no change in price from time t-1 to t had occurred.

$GRVM_t = (VM_t - VM_{t-1})/VM_{t-1}$ growth rate in the country's import volume from time t-1 to t

Substituting,

$MSUB_t = M_{t-1}[EL_t(GDPGR_t) - GRVM_t]$

Technological change is partially captured by changes in the elasticity over time.

If import intensification takes place, it means that country's imports are higher than expected, and therefore, $MSUB_t$ will be negative.

3) Economic Compression (ECOM)

$ECOM_t = MVT_t - MH_t \qquad t=(1970,..,1991)$

$ECOM_t$ is a measure of the change in imports at time t due to compression of the economy.

$MVT_t = M_{t-1}[1 + EL_t(GDPT_t)]$

$GDPT_t$ is the expected trend rate of growth in country's GDP at year t, based on the previous ten years.

$\log GDP_i = a + bt_i \qquad b_t=GDPT_t \qquad i=t-1,\ldots,t-11.$

$MH_t = M_{t-1}[1 + EL_t(GDPGR_t)]$

Substituting we obtain,

$ECOM_t = M_{t-1}[EL_t(GDPT_t - GDPGR_t)]$

When economic compression takes place, $ECOM_t$ assumes positive values. Note that $ECOM_t$ is a measure of the effect of change in the growth rate alone (i.e. does not include effect of change in elasticity).

4) Additional Net External Financing (ANEF)

$ANEF_t = [(TOTT_t + EVE_t + IRF_t + CUM_t) - (EPR_t + MSUB_t + ECOM_t)]$

$ANEF_t$ is the ex-post equilibrium measure of external financing required to compensate the difference between the total external shock and performance response measures.

It is positive when an additional external financing is required.

APPENDIX II

EXTERNAL SHOCKS AND PERFORMANCE MEASURES: METHODOLOGY APPLIED TO SPECIFIC TRADE CATEGORIES

In this appendix, we extend the methodology adopted in Appendix I, to compute the effect of external shocks on specific export and import categories. Again, variations in prices and quantities are estimated separately to isolate the impact and the reaction to different external shocks.

In the case of the Philippines, coconut oil and petroleum are used as examples of export and import commodities. The methodology, however, can be extended to other trade categories.

EXPORTS: THE COCONUT OIL CASE

In this part, the methodology to evaluate the effect of price and global demand shocks on the export of coconut oil and the export promotion response measure is presented.

Results are showed in Table 5 and Figure 5.

External Shocks

Effect of Price Change

We assume that the Philippines is a price taker in global markets. The effect of variations in the world market price of coconut oil on export receipts is computed on a year by year basis:

$$TOTC_t = VEC_t (PEC_{t-1} - PEC_t) \qquad t=(1970,..,1990)$$

A positive $TOTC_t$ is a loss in coconut oil export receipts by the Philippines at time t, due to unfavorable price changes from time t-1 to t.

$VEC_t = EC_t/PEC_t$ = volume of coconut oil export by the Philippines at time t

EC_t = value of Philippines'coconut oil export at time t (FOB, current US$)

PEC_t = price of Philippines' coconut oil export at time t

Coconut Oil Export Volume Effect (EVCE)

$EVCE_t = EC_{t-1} (TCXW_t - GRCXW_t)$ t=(1970,..,1990)

$EVCE_t$ is the value of coconut oil exports by the Philippines at time t, if it is assumed that no change in price from time t-1 to t had occurred.

A positive $EVCE_t$ indicates an unfavorable shock on the Philippines current account.

EC_{t-1} = value of coconut oil export by the Philippines at time t-1 (FOB, current US$)

$TCXW_t$ is the expected rate of growth in world export volume of coconut oil at year t, based on the previous ten years. The estimate is obtained through:

$logCXW_i = a + bt_i$ $b = TCXW_t$ i=t-11,...,t-1

$GRCXW_t = (CXW_t - CXW_{t-1})/CXW_{t-1}$ growth rate in world export volume of coconut oil from time t-1 to t

$CXW_t = CWX_t/PWX_t$ = volume of world coconut oil exports at time t

CWX_t = value of world coconut oil exports at time t (current US$)

PWX_t = world price of coconut oil exports at time t

Performance Response Measure

Export Promotion (EXCOCPR)

If there was an export volume shock on coconut oil, it is of interest to observe how the Philippines responded. We analyze this by estimating the corresponding export promotion effort.

$EXCOCPR_t = EXCOC_t - EXCOCH_t$ t=(1970,..,1990)

$EXCOCPR_t$ provides a measure of coconut oil export promotion by the Philippines at time t, assuming that price had not changed from time t-1 to t. It is the difference due to changes in volume over time which reveals whether the country has increased its own international share of the trade category here analyzed.

$$EXCOC_t = EC_{t-1} (1 + GRVEC_t)$$

$EXCOC_t$ is the value of coconut oil exports by the Philippines at time t, if it is assumed that no change in price from time t-1 to t had occurred.

EC_{t-1} = value of coconut oil export at time t-1 (FOB, current US$)

$GRVEC_t = (VEC_t - VEC_{t-1})/VEC_{t-1}$ growth rate in the Philippines export volume of coconut oil from time t-1 to t

$$EXCOCH_t = EC_{t-1} (1 + GRCXW_t)$$

$EXCOCH_t$ is the value of coconut oil exports at time t determined by annual changes in the volume of coconut oil world exports. Again it is assumed that the price remains at time t-1 level.

$GRCXW_t = (CXW_t - CXW_{t-1})/CXW_{t-1}$ growth rate in world export volume of coconut oil from time t-1 to t

Substituting we obtain:

$$EXCOCPR_t = EC_{t-1}(GRVEC_t - GRCXW_t)$$

A positive EXCOCPR shows that the country increases its international share of coconut oil exports.

IMPORTS: THE PETROLEUM CASE

The overall effect of changes in import prices computed in the Appendix I, can be disaggregated in various components. Here, the reaction of the Philippines economy to petroleum price variations is analyzed. Since variations in the price of petroleum have a strong impact on the balance of payments of many countries, it is of interest to extend this analysis to other countries to gauge different reactions to the same external shock. It is important to point out that the same methodology can be extended to other import categories.

As above, it is assumed that the Philippines is a price taker in the world market.

External Shock

Effect of Price Changes

The effect of variations in the price of petroleum is computed on a year by year basis:

$$TOTP_t = VMP_t (PMP_t - PMP_{t-1})$$

$VMP_t = MP_t/PMP_t$ volume of petroleum imports by the Philippines at time t

$MP_t =$ value of petroleum imports by the Philippines at time t (CIF, current US$)

$PMP_t =$ unit value of petroleum imports

A positive $TOTP_t$ represents an increase in the value of petroleum imports due to unfavorable price changes from time t-1 to t.

Performance Response Measures

Petroleum Import Intensity (PMSUB)

$PMSUB_t = PMH_t - PMA_t$ $\quad t=(1970,..,1990)$

$PMH_t = MP_{t-1}[1 + ELPM_t(GDPGR_t)]$

PMH_t is a hypothetical value of petroleum imports, assuming that the import elasticity of petroleum imports to GDP had remained at its "historical" level (i.e. based on the previous ten years), and petroleum price had not varied from time t-1 to t.

MP_{t-1} = value of petroleum imports by the Philippines at time t-1 (CIF, current US$)

$ELPM_t$ is the petroleum import elasticity to GDP expected at time t based on the previous ten years and computed by regressing:

$\log VPM_i = a + b \log GDP_i \quad b=ELPM_t \quad i=t-1,\ldots,t-11.$

VPM_t = volume of petroleum imports by the Philippines at time t (index 1985=100)

$GDPGR_t = (GDP_t - GDP_{t-1})/GDP_{t-1}$ = GDP growth in the Philippines from time t-1 to t

$PMA_t = MP_{t-1}(1 + GRVPM_t)$

PMP_t is the value of petroleum imports based on change in the volume of petroleum imports and assuming that petroleum price had not changed from time t-1 to t.

$GRVPM_t = (VPM_t - VPM_{t-1})/VPM_{t-1}$ = growth in the volume of petroleum imports by the Philippines from time t-1 to t

Substituting,

$PMSUB_t = MP_{t-1}[ELPM_t (GDPGR_t) - GRVPM_t]$

Economic Compression (PECOM)

$PECOM_t = PMVT_t - PMH_t$

$PECOM_t$ provides a measure of the amount of petroleum (value) imported as a consequence of changes in GDP. These are computed as deviations from the "historical" GDP growth expected at year t.

It is computed as follows:

$PMVT_t = MP_{t-1} [1 + ELPM_t(GDPT_t)]$

$GDPT_t$ is the expected trend rate of growth in GDP at year t, based on the previous ten years (see Appendix I, page)

$PMH_t = MP_{t-1} [1 + ELPM_t (GDPGR_t)]$

Substituting,

$PECOM_t = MP_{t-1} [ELPM_t (GDPT_t - GDPGR_t)]$

SOURCES OF DATA:

For the Philippines:

TRADE:

- Value of Merchandise Exports (fob) at current prices (US$): World Bank, Stars and World Tables 1993;
- Value of Merchandise Imports (cif) at current prices (US$): World Bank, Stars and World Tables 1993;
- Unit Value of Exports: World Bank, Stars and World Tables 1993;
- Unit Value of Imports: World Bank, Stars and World Tables 1993;
- Value of Petroleum Imports, cif, (US$): Central Bank of the Philippines, Selected Philippines Economic Indicators, 1990;
- Price of Petroleum Imports: Central Bank of the Philippines, Selected Philippines Economic Indicators, 1990;
- Value of Coconut Oil Exports, fob, (US$): Central Bank of the Philippines, Selected Philippines Economic Indicators, 1990;
- Price of Coconut Oil Exports, (US$/t): Central Bank of the Philippines, Selected Philippines Economic Indicators, 1990;

DEBT:

- Value of Debt at Variable Interest Rate, (US$): IECDI database;
- LIBOR, six-months on US$ deposits, period average: IMF, International Financial Statistics, various years;

GDP:

- GDP at current market prices (US$):CP.$.GDP.MP from ANDREX;
- GDP at constant 1985 market prices (US$): KP.$.GDP.MP from ANDREX;

For the World:

- Current Value of World Exports and Unit Value of World Exports: IMFIFSBA,EXPVAL_TOTFOB_USD from BESD;

- Current Volume of World Coconut Oil Export: Oil World, 1987 and 1992;

- Current World Price of Coconut Oil, (US$/1000t): World Bank, Market Outlook for Major Primary Commodities, vol.1, 1992.

Table 1: Coefficients of Equation (3), Relating Changes in the Current Balance of Payments Deficit to Changes in Exogenous Variables

Exogenous Variable	Coefficient
Current import prices	α_1': $(1-c)[m'+w(g_{Lw})^{-1}g_{Lp}] + p'e_{pp}$ (<0)
Future import prices	β_1': $-c[M'+W(\bar{G}_{LL})^{-1}\bar{G}_{LP}] + p'e_{pP} + p_F\bar{I}_P$ (>0)
Current export prices	α_2: $-(1-c)x < 0$
Future export prices	β_2: $cX > 0$
Current export sales	α_3: $-(1-c)[q^*-q-w(g_{Lw})^{-1}g_{Lx}] < 0$
Future export sales	β_3: $c[Q^*-Q-W(\bar{G}_{LL})^{-1}\bar{G}_{LX}] + p_F\bar{I}_X > 0$
Current transfer	α_4: $-(1-c) < 0$
Future transfer	β_4: $c > 0$
Current fiscal expansion	χ_1: $1 > 0$
Current real wage	χ_2: $-(1-c)w(g_{Lw})^{-1} > 0$
Future real wage	χ_3: $(cW+p_F\bar{I}_L)(\bar{G}_{LL})^{-1} < 0$

Notes: Symbols are explained in the text. The signs given after the coefficients (especially those in brackets) are subject to qualifications discussed in Neary (1993).

Table 2: PHILIPPINES

External Shocks and Policy Performance Measures

(as a percent of GDP)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
EXTERNAL SHOCKS																				
Terms of trade effect	1.01	-2.24	3.19	6.39	0.08	0.63	1.32	0.80	3.10	2.19	0.36	-1.87	-1.44	1.55	-0.82	0.11	-1.89	0.85	3.78	0.60
Export Volume effect	-0.15	-0.52	0.28	2.55	-0.44	0.48	0.19	-0.28	0.75	1.00	1.35	0.04	-1.03	0.09	0.25	-0.63	-0.93	-0.66	0.03	-0.33
Interest rate effect	-0.14	0.35	0.12	-0.29	-0.16	0.02	0.35	0.31	0.21	0.34	-0.43	-0.72	0.30	-0.59	-0.45	0.15	0.25	0.28	-0.22	-0.53
Additional Debt Serv.	0.00	0.17	-0.09	0.42	0.62	0.59	0.72	1.20	1.52	2.19	2.08	1.96	2.33	1.46	1.15	1.09	1.31	1.55	1.83	1.62
Total	0.73	-2.23	3.49	9.06	0.10	1.72	2.57	2.03	5.58	5.72	3.36	-0.58	0.16	2.50	0.12	0.72	-1.26	2.02	5.42	1.36
POLICY PERFORMANCE MEASURES																				
ANEF*	2.28	-2.93	6.63	6.34	0.61	-0.24	4.25	2.88	3.44	2.84	2.38	-0.27	-4.21	-0.53	-0.09	3.52	2.55	6.09	5.55	-1.82
Export Promotion	-3.47	-0.30	-1.89	3.43	-0.26	1.65	-0.45	-0.46	1.94	1.32	0.25	-1.60	-1.44	-0.80	0.79	-0.62	0.27	1.03	0.69	-0.32
Import Intensity	2.08	1.38	-1.59	-0.71	0.01	0.37	-1.14	-0.16	0.31	1.10	0.25	0.43	2.74	1.75	-0.58	-1.67	-2.84	-2.17	1.22	1.81
Economic Compression	-0.14	-0.38	0.35	-0.01	-0.26	-0.05	-0.08	-0.22	-0.11	0.46	0.49	0.87	3.07	2.08	-0.01	-0.51	-1.24	-2.93	-2.04	1.68
Total	0.73	-2.23	3.49	9.06	0.10	1.72	2.57	2.03	5.58	5.72	3.36	-0.58	0.16	2.50	0.12	0.72	-1.26	2.02	5.42	1.36

Note: * Additional Net External Financing

Source: Computation based on methodology presented in the Appendix. Data from World Bank and IMF.

	1972-75	1976-80	1981-85	1986-91
Terms of Trade effect: average	2.09	1.19	0.16	0.44
Export Volume effect: average	0.54	0.14	0.29	-0.38
Interest Rate effect: average	0.01	0.14	-0.22	-0.09
Additional Debt Serv: average	0.12	0.93	2.00	1.42
Total External Shock: average	2.76	2.40	2.23	1.39
stdev	4.80	2.00	2.54	2.27

Table 3: PHILIPPINES

Selected Economic Indicators

PHILIPPINES	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
GDP growth (%)	5.4	5.4	8.8	3.4	5.5	8.8	5.5	5.1	5.6	5.1	3.4	3.6	1.8	-7.3	-7.3	3.4	4.8	6.3	6.0
CPI (%)	21.40	8.20	16.58	34.16	6.76	9.20	9.90	7.33	17.53	18.20	13.08	10.22	10.03	50.34	23.10	0.75	3.79	8.76	12.21
DOMESTIC ABSORPTION \1																			
Private Consumption, as a % of GDP	70	69	64	65	65	62	62	64	63	67	67	69	69	72	75	72	73	71	71
General Gov't Consumption as a % of GDP	9	10	10	10	11	11	10	10	9	9	9	9	8	7	8	8	8	9	9
Gross Domestic Investment as a % of GDP	21	21	22	27	31	33	31	31	33	29	27	28	30	22	15	16	18	18	22
Fixed Investment as a % of GDP	18	18	17	20	26	26	25	25	28	27	28	28	30	25	17	17	17	18	21
POLICIES																			
Deficit as a percent of GDP \2										5.90	7.90	7.80	5.20	3.10	2.60	4.80	1.10	2.40	2.00
Expenditure/GDP (%) \3		15.20	16.11	13.63	16.99	15.27	14.76	14.73	13.84	15.49	17.01	16.52	14.38	12.73	14.01	16.04	17.49	16.95	16.64
MONETARY growth: (M2-P) (%) \4			5.5	-11.6	1.4	9.4	17.6	21.3	-1.5	-0.8	5.8	15.2	7.9	-26.7	-13.4	0.6	9.2	12.5	15.6
Exchange Rate \5	6.43	6.67	6.76	6.79	7.25	7.44	7.40	7.37	7.38	7.51	7.90	8.54	11.11	16.70	18.61	20.39	20.57	21.09	21.74
Real Exchange Rate Index \6									97.27	102.38	105.66	109.68	92.26	91.39	100.00	78.03	71.80	69.84	74.93
Unemployment Rate \7	5.2	6.5	5.0	4.2	4.1	5.7	9.1	9.5	7.1	6.1	9.1	9.5	10.5	10.6	12.5	11.8	11.2	9.6	9.2
Real Wages of Unskilled Labor (1975 = 100) \8	152	148	133	107	107	106	103	100	89	79	96	104	106	110	113	110	112	114	129
Private consumption per capita (1987 US$)	380	380	390	400	390	390	410	420	440	450	450	460	440	420	410	400	430	440	450
Gross domestic invest. per cap.(1987 US$)	100	100	100	120	150	170	160	170	190	180	180	190	200	130	90	90	100	110	140
STOCKS																			
External Debt (Millions of US $)	1777	1962	2028	2428	3064	4437	8183	10772	13282	17417	20883	24551	24395	24355	26622	28207	29763	28965	28375
External Debt/GDP (%)	24	24	20	18	21	26	42	47	48	54	59	66	73	78	87	94	89	76	67
Change in reserves (Mill of US $) \9	-99.43	-180.97	-711.61	-576.8	11.236	64.213	26.802	-866.74	-376.86	-955.57	331.86	717.8	2045.8	-183.64	294.08	-1099	95.278	-625.67	-280.12
Nominal Interest Rate \10	11.95	11.92	9.43	10.05	10.34	10.19	10.69	10.88	12.28	12.14	12.55	13.78	14.23	28.53	26.72	16.08	11.51	14.67	18.65
INCOME DISTRIBUTION \11																			
Education:																			
Primary School Enrol. Ratio	108				107	103	108	110	107	113		109	109	107	106	107	109	110	111
Secondary School Enrol. Ratio	48				54	60	61	63	64	65		66	67	68	64	67	68	71	73
Higher Education Enrol. Ratio																			
Infant Mortality Rate	65	64	62	60	58	56	54	53	53	52	52	51	50	49	47	46	45	44	43
Expenditure on education/GDP \12		2.29	1.96	1.83	1.95	1.93	1.87	2.14	1.97	1.73	2.20	2.41	2.17	1.82	2.25	2.44	2.49	2.74	3.19
Expenditure on health/GDP \13		0.45	0.44	0.51	0.66	0.73	0.72	0.67	0.69	0.61	0.69	0.68	0.67	0.60	0.67	0.75	0.72	0.69	0.79

\1 Ratio based on data in current prices, local currency.

\2 CNF = Consolidated Non-financial Public Sector Deficit

\3 Central Government Expenditure and Lending minus repayments

\4: M2 = money + quasi money as defined in IFS and P = CPI growth as in IFS. Computation based on differences between growth rates.

\5 Pesos per US Dollar (annual averages line rf in IFS)

\6: Level 1985 = 100; IMF.

\7: Year average. CEM April 1993

\8: Monthly Wages of Unskilled Labor. Metro Manila/National Capital Region. CEM April 1993.

\9: Net change in holdings of international reserves resulting from transactions on the current and capital accounts (- = increase)

\10: Treasury Bill Rates (91-Days)

\11: Many indicators are based on census or household surveys, which occur infrequently. Thus some reported figures are interpolated or extrapolated estimates.

\12 Central Government Expenditures on Education/GDP (local currency)

\13 Central Government Expenditures on Health/GDP (local currency)

Sources. World Bank: World Tables 1993, Stars 1993, CEMs, Boad, Andres. IMF: IFS Yearbook 1993 and REER.

Table 4. Philippines
Main Events and Policy Measures

1970-1972

Implementation of an export promotion plan (Export Incentives Act)
Introduction of a managed floating regime. Devaluation of the peso.
IMF-sponsored stabilization program

Establishment of the Consultative Group for the Philippines

1973

Provisional accession to the GATT
Liberalization of foreign investments repatriation
Exchange rate over-valuation

1974-1979

Philippine Trade Act
Increase in domestic interest rates
Increase in public infrastructure spending

During the 1970s the number of government-owned corporations increased from
75 to 207. The expansion was concentrate in banking, transport, water, and energy sectors.

Increase in public spending. Strong consequences on external debt and private sector (crowding out).

1980-1982

Deterioration in the prices of the major commodity exports
Financial Deregulation (11)
Trade policy reform: reduction in tariff rates .
Dewey-Dee crisis. It was a case of bankruptcy which had a strong impact on the financial system.
Huge capital flight

1983

Failure to reach a new agreement with the IMF and interruption of a Stand-By in 1983.
It is discovered that the Central Bank overestimated its international reserves level by as much as 50 percent.
Announcement of a 90-day moratorium on external debt amortization.
Devaluation, introduction of extraordinary measures to control imports and allocate foreign exchange.

1984-1986

Monetary contraction
New tax on foreign exchange for non-merchandise transactions and a windfall tax on traditional exports
Rationalization of investment incentives
Government and central bank interventions to support public financial sector losses.
New Standby arrangement with the IMF, rescheduling agreement with Paris Club creditors

Rescheduling agreement with commercial banks
Privatization of the sugar monopoly

Table 4. Philippines
Main Events and Policy Measures

Depreciation
End of Marcos' era

Elections and new democratic regime
Trade reform and nominal peso depreciation
New Standby with the IMF and economic recovery loan with the Bank
Reform of the tax system. Introduction of a Value Added Tax
Abolition of sugar and coconut marketing monopolies

1987-1989

Liberalization of most producer prices
Beginning of a re-organization and privatization of public non-financial corporations.
Elimination of quantitative restrictions on capital and intermediate goods

Minimum wage legislation civil servant standardization program. I
Increase in real wages and worsening of competitiveness.
Domestic interest rates went up.
Military attempt to overthrow the Government
Agreement with Paris Club provided cash flow relief

1990-1991

Earthquake in Luzon
Gulf crisis: rise in oil import prices and decrease in remittances
Typhoon
Debt buyback
Monetary contraction
Depreciation
Adoption of EO 470 - Tariff Reform Program
Removal of quantitative restrictions

Table 5: Philippines

Coconut Oil Export Effects

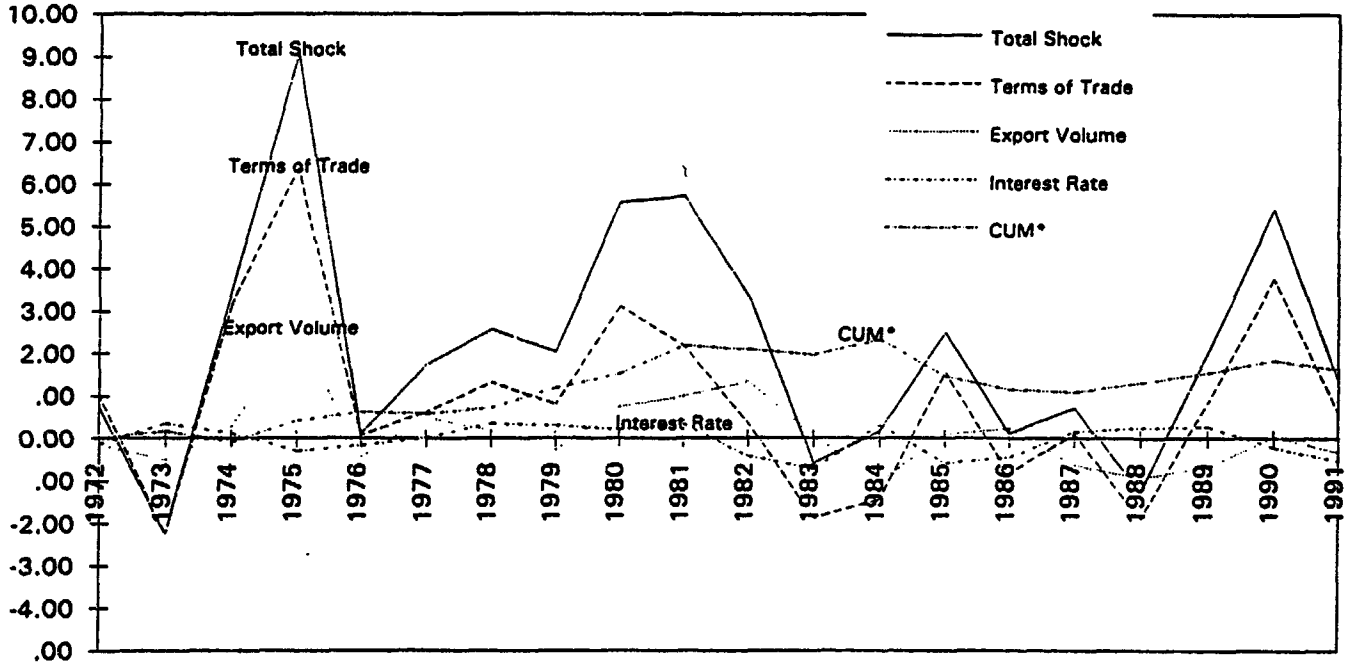
(as a share of GDP)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Price Effect	0.48	-0.76	-1.69	2.23	0.14	-0.74	-0.34	-0.92	0.87	0.31	0.19	-0.25	-0.88	0.96	1.11	-0.32	-0.30	0.04	0.45
Export Volume Effect	-0.21	0.18	0.15	-1.13	-0.35	0.42	-0.13	0.53	0.02	-0.13	0.19	0.04	0.51	-0.45	-0.39	0.10	0.13	0.03	-0.23
Total External Shock	0.27	-0.57	-1.54	1.09	-0.21	-0.32	-0.47	-0.38	0.88	0.18	0.38	-0.21	-0.37	0.51	0.72	-0.22	-0.17	0.07	0.23
Export Promotion	-0.04	0.06	0.04	-0.07	0.10	0.11	0.28	-0.17	0.16	-0.03	-0.07	0.06	-0.24	-0.26	0.68	-0.09	-0.12	-0.02	0.18

Source: Estimated using methodology Appendix II

Figure 1: Philippines

External Shocks
(as a percent of GDP)

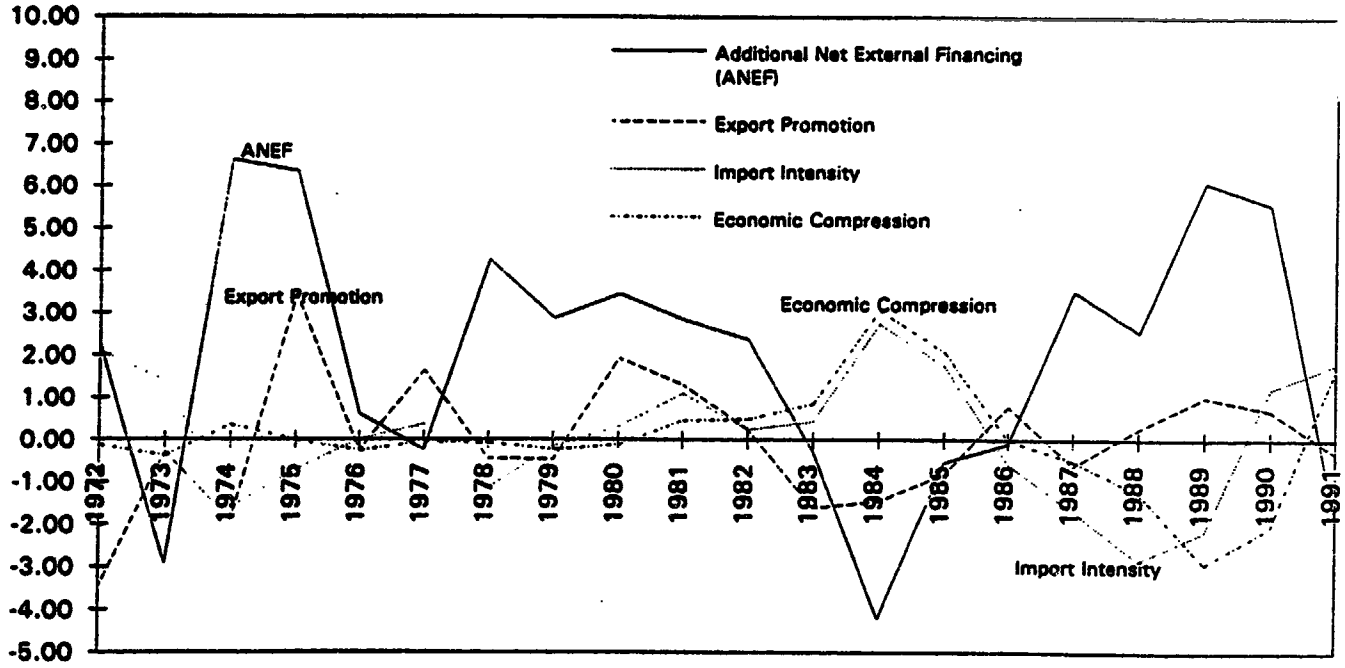


* CUM = cumulative impact of additional borrowing due to shocks

Source: Estimated using methodology in Appendix I

Figure 2: Philippines

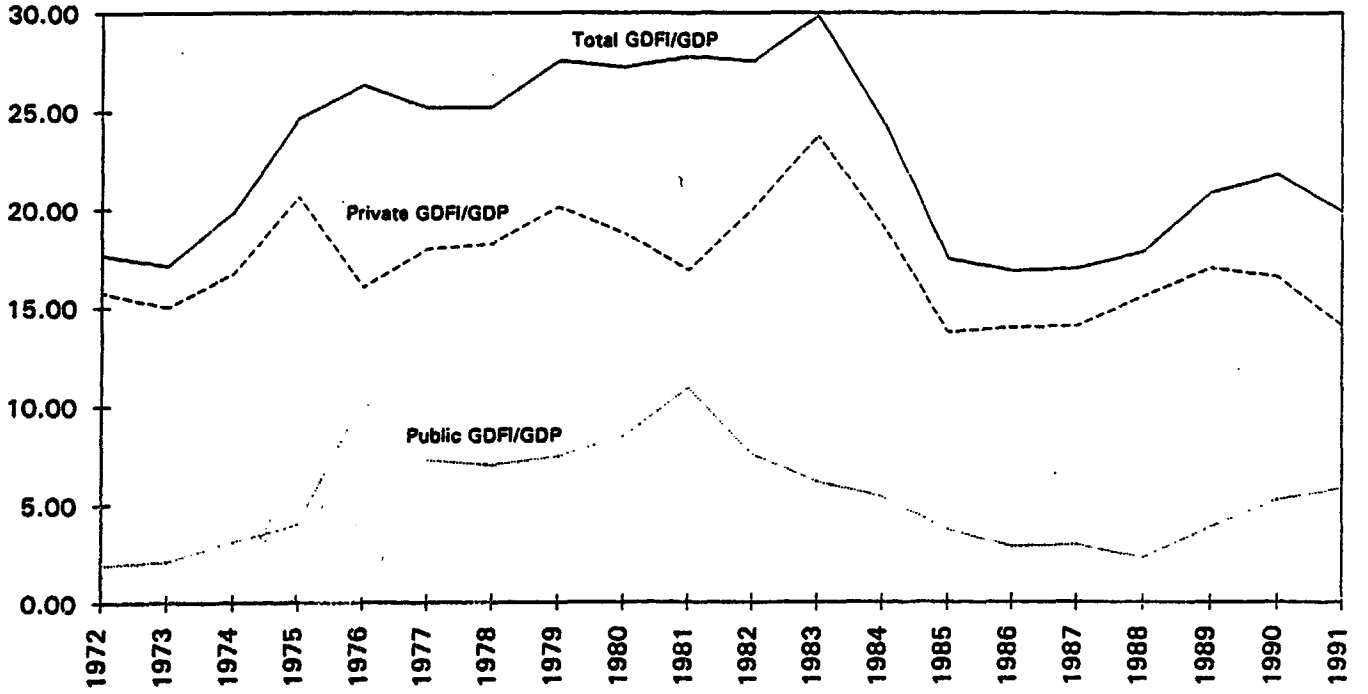
Policy Performance Measures
(as a percent of GDP)



Source: Estimated using methodology Appendix 1

Figure 3: Philippines

Gross Domestic Fixed Investments
(as a percent share of GDP)



Source: World Bank, Andrex ; Government of The Philippines, National Accounts.

Figure 4a: Philippines
Nominal Exchange Rates: Official and Black Market
(pesos/US dollar)

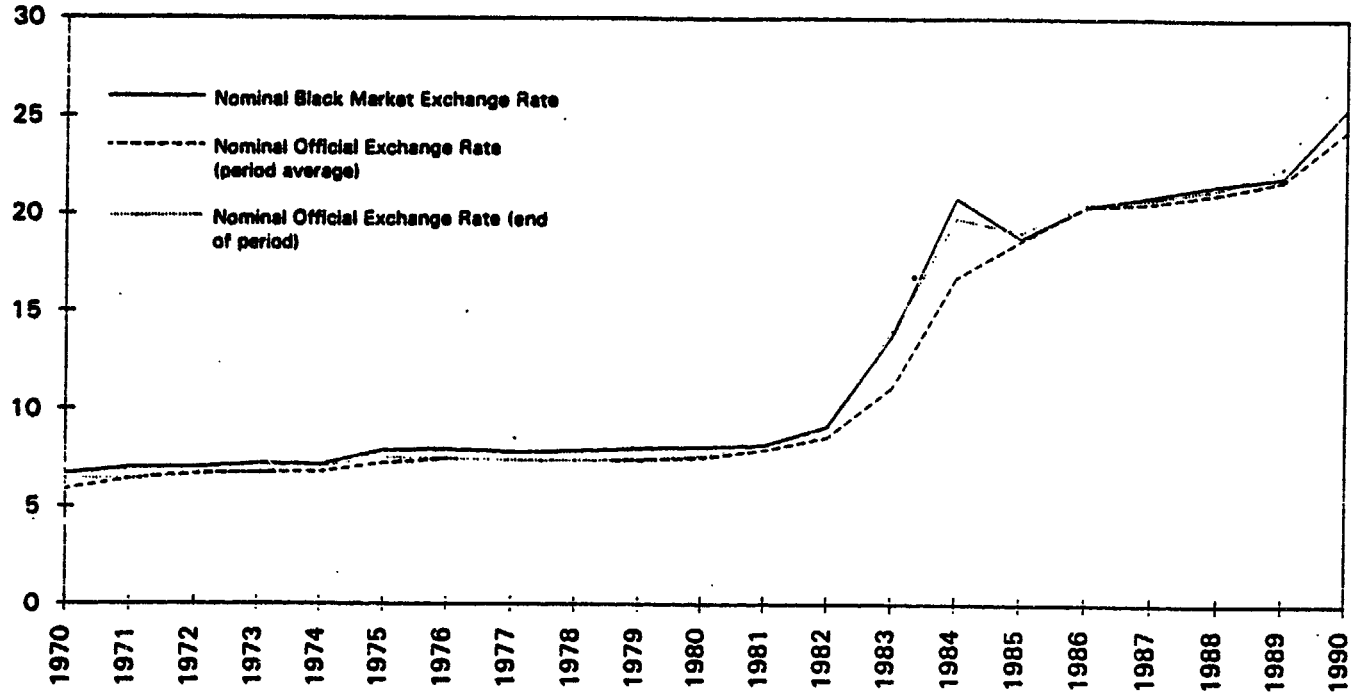
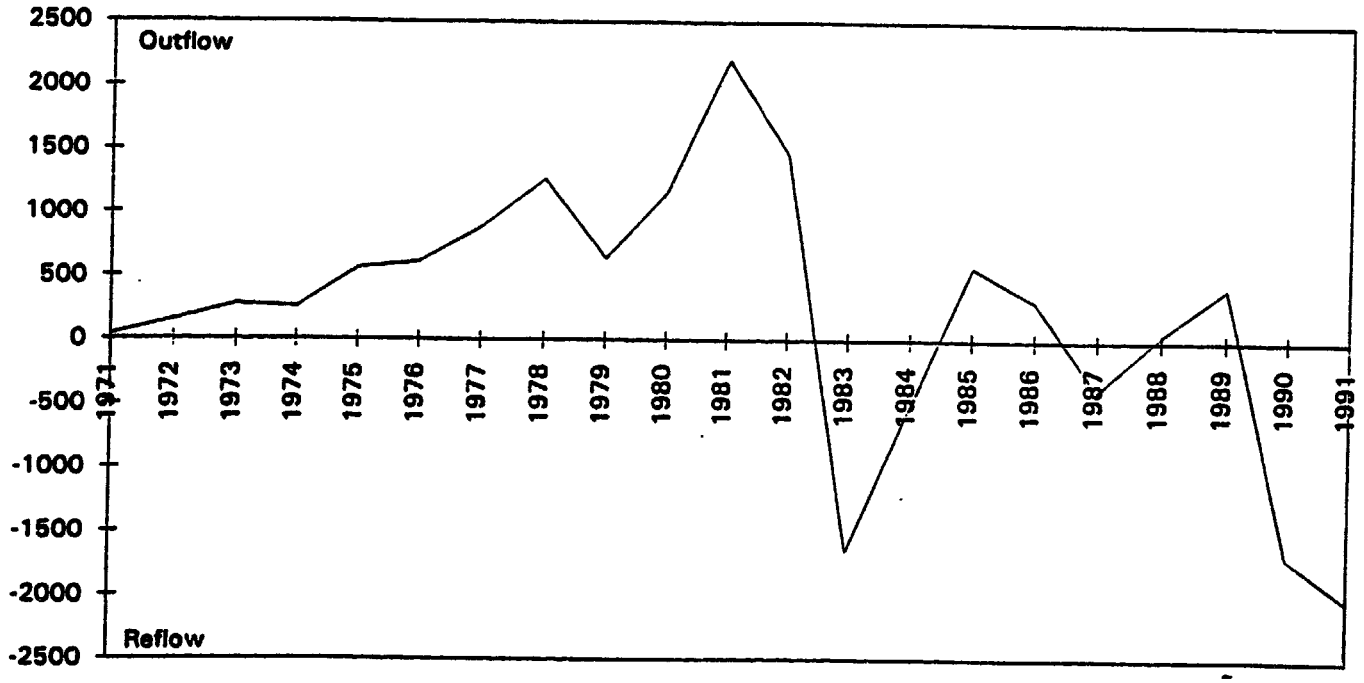


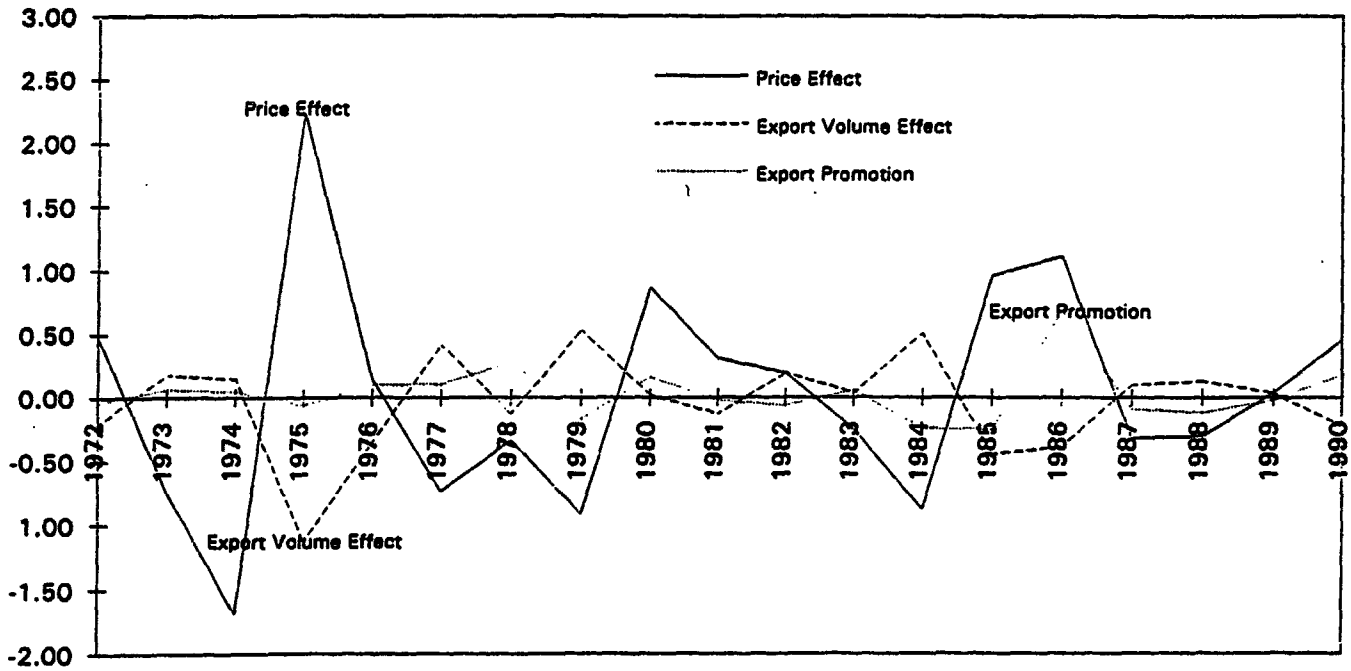
Figure 4b: Philippines
Measure of Capital Flight
(US$ millions)



Source: World Bank, CEM, April 1993.

Figure 5: Philippines

Coconut Oil Export Effects
(as a percent of GDP)



Source: Estimated using methodology Appendix II.

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